Haier SERVICE MANUAL

Order NO. Ref0911S006V0

Refrigerator

MODEL:HRFZ-250DAA

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It dose not contain warnings and cautions to advice non-technical individuals of potential dangers in attempting to service a product. Product powered by electricity should by serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

©2012(HAIER ELECTRICAL APPLIANCES COR. LTD)
All right reserved. Unauthorized copying and distribution is a violation of law.

Haier Group

Contents

Table of Contents.....2

Chapter 1 General Information 3

1-1. General Guidelines 3

1-2. Insurance Test 3

1-3. How to read this Service Manual 4

Chapter 2 Product Feature 5

2-1. Specifications 5

2-2. External views 6

Chapter 3 Disassembly 7

3-1. Thermostat disassembly 7

3-2.The door right-left change 9

Chapter 4 Adjustments and maintenance 10

4-1. Adjust the adjustable feet 10

4-2.Adjus the thermostat 10

4-3. Maintenance 11

Chapter 5 Flow chart 12

5-1. Refrigeration flow chart 12

5-2. Refrigeration flow scenography 13

Chapter 6 Circuit diagram 14

6-1. Brief principle diagram 14

Chapter 7 Trouble shooting 15

7-1. phenomena and solving 15

7-2.Compressor parameter 18

7-3.Termostat parameter 18

Chapter 8 Quick check 19

8-1.No cooling 19

8-2.Compressor no start 20

8-3.Poor cooling 22

8-4.Noisy 23

Chapter 1 General Information

1-1. General Guidelines

When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1) Leakage Current Cold Check

2) Leakage Current Hot Check

3) Prevention of Electro Static Discharge (ESD) to Electrostatic Sensitive

1-2. Insurance Test

1. Check if there is any leak of current.
2. Cut out the power supply before the repair to avoid an electrical shock hazard.
3. In the case of a live-line test, insulating gloves should be worn to avoid potential electrical shock.
4. Confirm the rated current, voltage and capacity before testing with any kinds of instruments.
5. Watch if the upper door is open when we check something at a lower position.
6. Take out every part in the cabinet before moving the machine, especially things like panels (e.g. glass shelf).
7. Please wear intact cotton gloves when repair any parts of the evaporator, so that scratches by the sharp fins can be avoided.
8. If there is a breakdown with the refrigeration system, please surrender the machine to the service center, else the leaked refrigerant may pollute the atmosphere.
9. The refrigerator use AC of 220-240V with a frequency of 50Hz.
10. A big fluctuation of voltage (exceed the range 187～242V) may cause a start failure of the refrigerator, a burn-out of the control panel and compressor, or an abnormal sound from the compressor in operation.
11. Take care not to damage the supply line. Don’t yank at the line; pull the plug out gently from the

receptacle. Don't press the line under the cabinet or step on it. Take care not to roll on or damage the supply line when moves the machine from the wall.

12. In the case of leakage of inflammable gases like carbon monoxide, open the door and windows. Don't pull out or insert the plugs of the appliance.

13. Don't touch the refrigeration surface of the freezing compartment when the refrigerator is in operation, especially when our hand is wet, else we may be glued to the surface.

14. Pull out the plug of power supply during clearance or power outage. Wait at least five minutes to resume the power supply in order to prevent damage to the compressor caused by continuous restart.

Photo used in this manual

The illustration and photos used in this Manual may not base on the final design of products, which may differ from the products in some way.

1-3. How to read this Service Manual

1-3-1. Using Icons

Icons are used to attract the attention to specific information. The meaning of each icon is described in the table below:

Note:

A "note" provides information that is not indispensable.

Caution:

A "caution" is used when there is danger that the reader, through incorrect manipulation, may damage equipment, loose data, get an unexpected result or has to restart (part of) a procedure.

Warning:

A "warning" is used when there is danger of personal injury.

Reference:

A "reference" guides to find additional information on a specific topic.

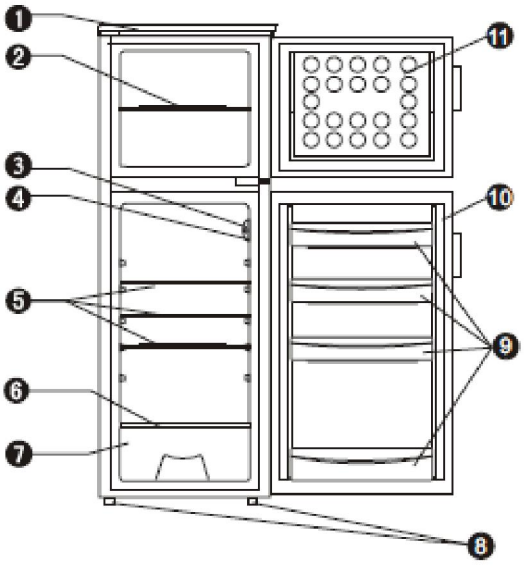
·Chapter 2 Product Feature

2-1. Specifications

1	**Model**	**HRFZ-250DAA**
	Photo	
	Commercial brand	Haier
	Product description	Refrigerator
2	**Capacity**	
	Total Volume (L)	217
	Net capacity	215
	Fridge volume net	171
3	**Features**	
	Manual Defrost	No
	Adjustable Temperature Control	Yes
	Defrost water outlet	No
	Open-door change (right –left)	Yes
	Kind of coolant	R600a
4	**Technical data**	
	Voltage/Frequency	220-240V/50Hz
	Input power	80W
5	**Aesthetics**	
	Colours	
	Top cover	YES
	Door	White
6	**Equipment or accessories**	
	Adjustable thermostat	Yes
	Adjustable feet (front / rear)	Front
7	**Product dimensions**	
	Unit dimensions H/W/D (mm)	1430*550*580
	Net weight (Kg)	45

8	Packing dimensions	
	Packing dimensions H/W/D (mm)	1473*575*605
	Gross weight (Kg)	50

2-2. External views



① Top Cover

② Wire Shelf

③ Thermostat and Lamp assembly

④ Door Switch

⑤ Glass Shelves

⑥ Crisper Cover

⑦ Crisper

⑧ Adjustable Front Feet

⑨ Door Balconies

⑩ Fridge Door Gasket

⑪ Freezer Door

Function schedule

1. Application of low noise technology

The compressor low noise technology is applied for integration of noise reduction and super freezing.

2. Energy-efficiency

Thick heat insulation is used to minimize temperature gain and to optimize the cooling system for the most efficient cooling result.

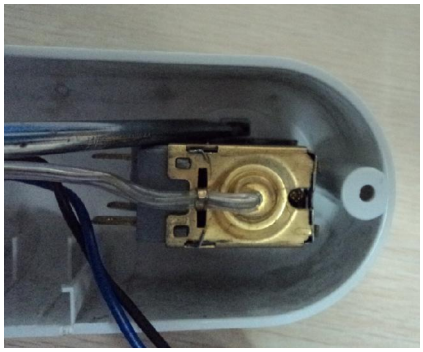
3. Crisper with adjustable moisture

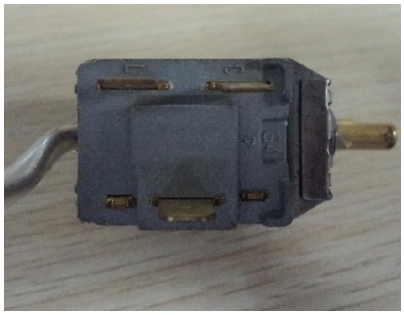
Moisture in the crisper can be adjusted for satisfaction of vegetables and fruit storage

Chapter 3 Disassembly

Cut the power when we demount and install the refrigerator.

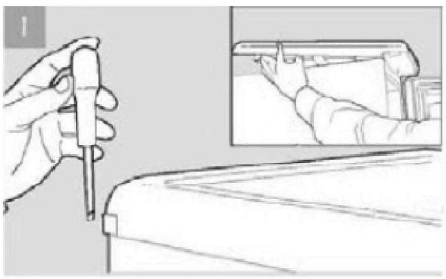
3-1. Thermostat disassembly

1	Use the screwdriver to take down the screw on the control cover.	1
2	Take down the thermostat knob, and remove the nut on the control cover.	2
3	Take down the terminals on the thermostat.	 3

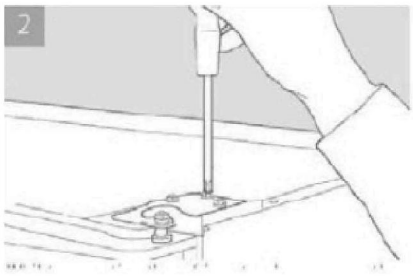
4	Take down the thermostat.	 4
5	We assemble it according to the reverse order. Note: connect the thermostat connection terminal must accord to the order of photo 4	

3-2.The door right-left change

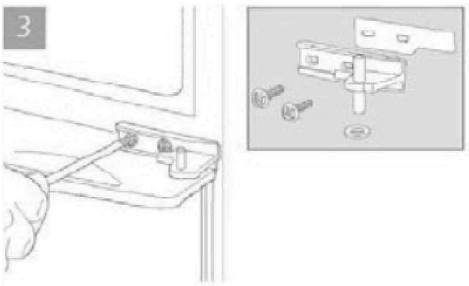
Reversing the door
Before you reverse the refrigerator doors, you should ensure the refrigerator is unplugged and empty. It is recommended to use a crosshead screwdriver and a spanner (both not supplied).



Remove the two screws on the rear of top cover then remove the top cover.

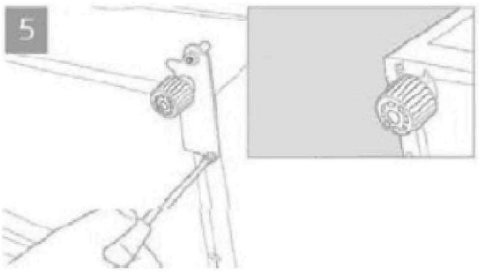


Remove the three screws and the top hinge then remove the upper door.



Support the lower door and remove the central hinge by removing the two screws.

Remove the lower door from the lower hinge pin. Tilt the fridge backwards and rest it on a firm surface.

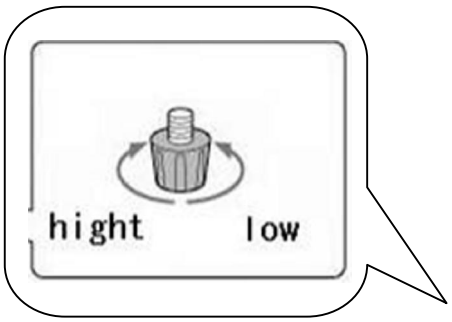


Remove the lower hinge by removing the screws. Refit the adjustable foot from left to right side.

Remove the lower hinge pin using a spanner. Turn the hinge over and replace the hinge pin in the same hole.
Replace the lower hinge on the other side and then stand the fridge upright.

Chapter 4 Adjustments and maintenance

4-1. Adjust the adjustable feet

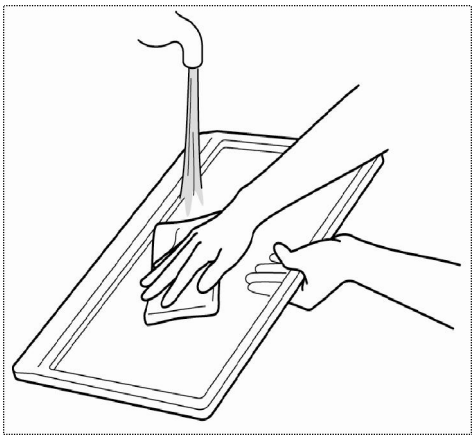


4-2.Adjus the thermostat

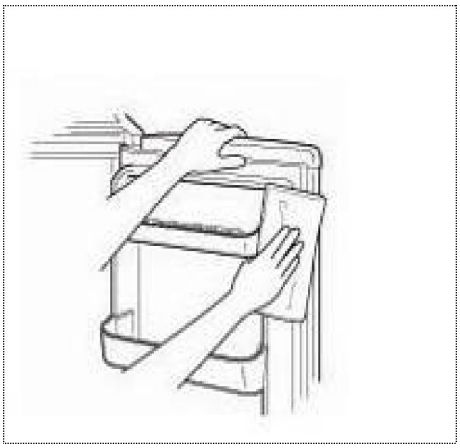
Our fridge freezer' temperature is controlled by means of an adjustable thermostat located at the right hand side wall of the refrigerator compartment. The thermostat may be positioned anywhere between 1 and 7. With "7" being coldest and "1" means turn off the fridge. And generally we turn the position at "3-5".

4-3. Maintenance

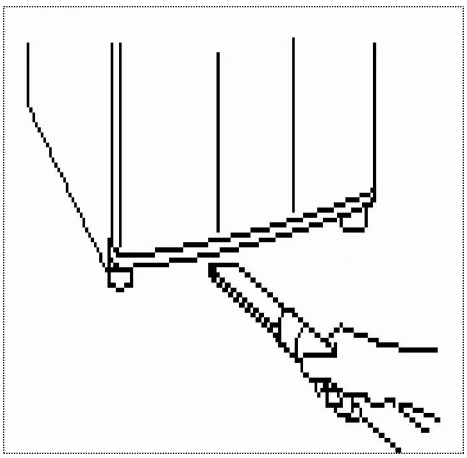
1. Wash the shelf with tap water.



2. Scrub away the dirty with soft cloth.

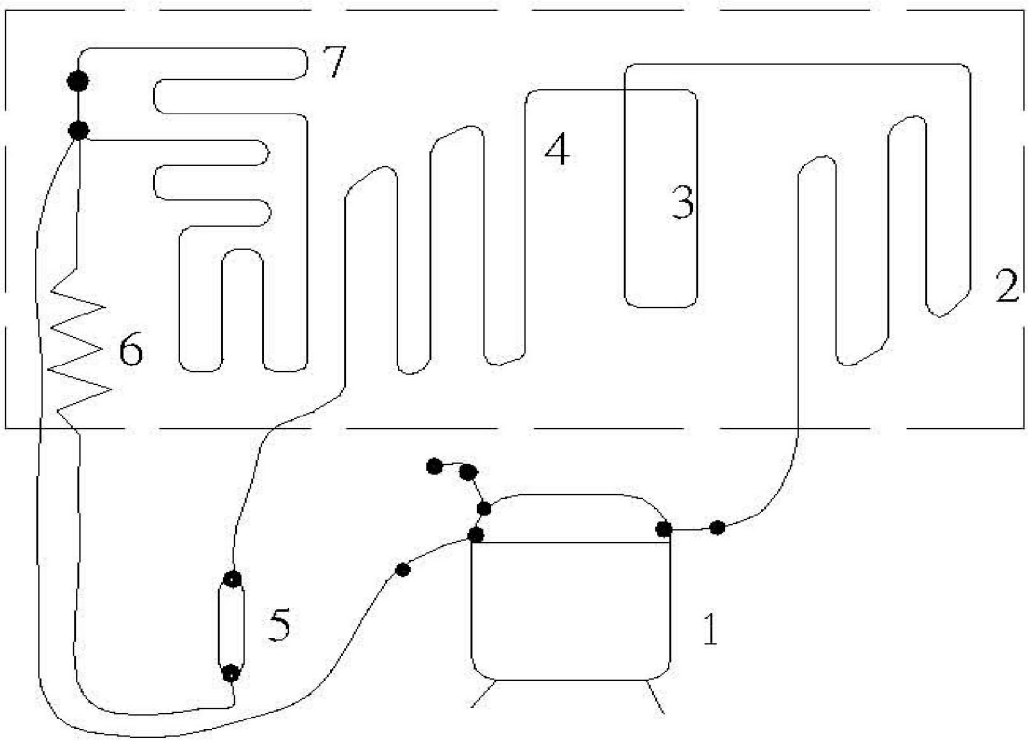


3. Use the cleaner to take away the dirty below the Refrigerator.



Chapter 5 Flow chart

5-1. Refrigeration flow chart



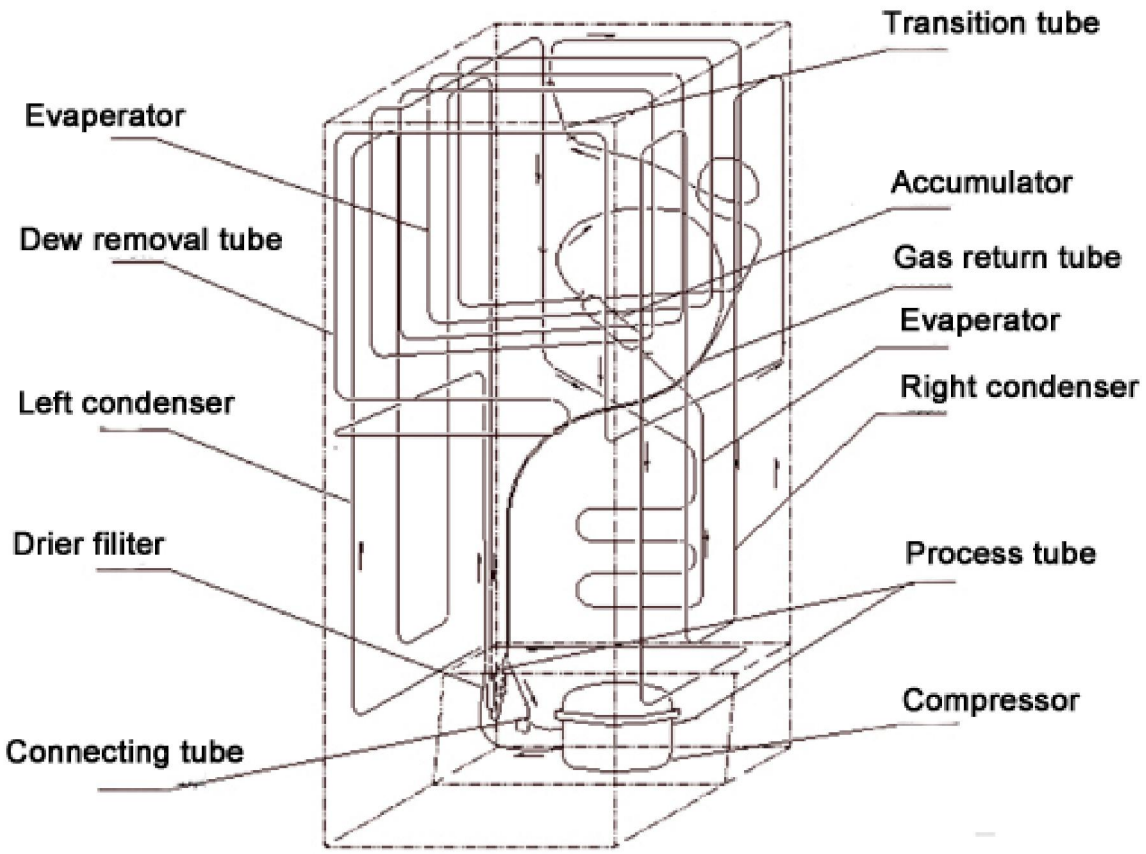
1. Compressor 2. Condenser 3. Heating tube 4. Condenser
5. Drier filter 6. Capillary tube 7. Evaporator

Brief Description of System Flow Chart

HRFZ-250DAA is a direct cooling single-system refrigerator; a mechanical type of control is generally adopted. When the refrigerator is powered on and the refrigerant flows in the sequence

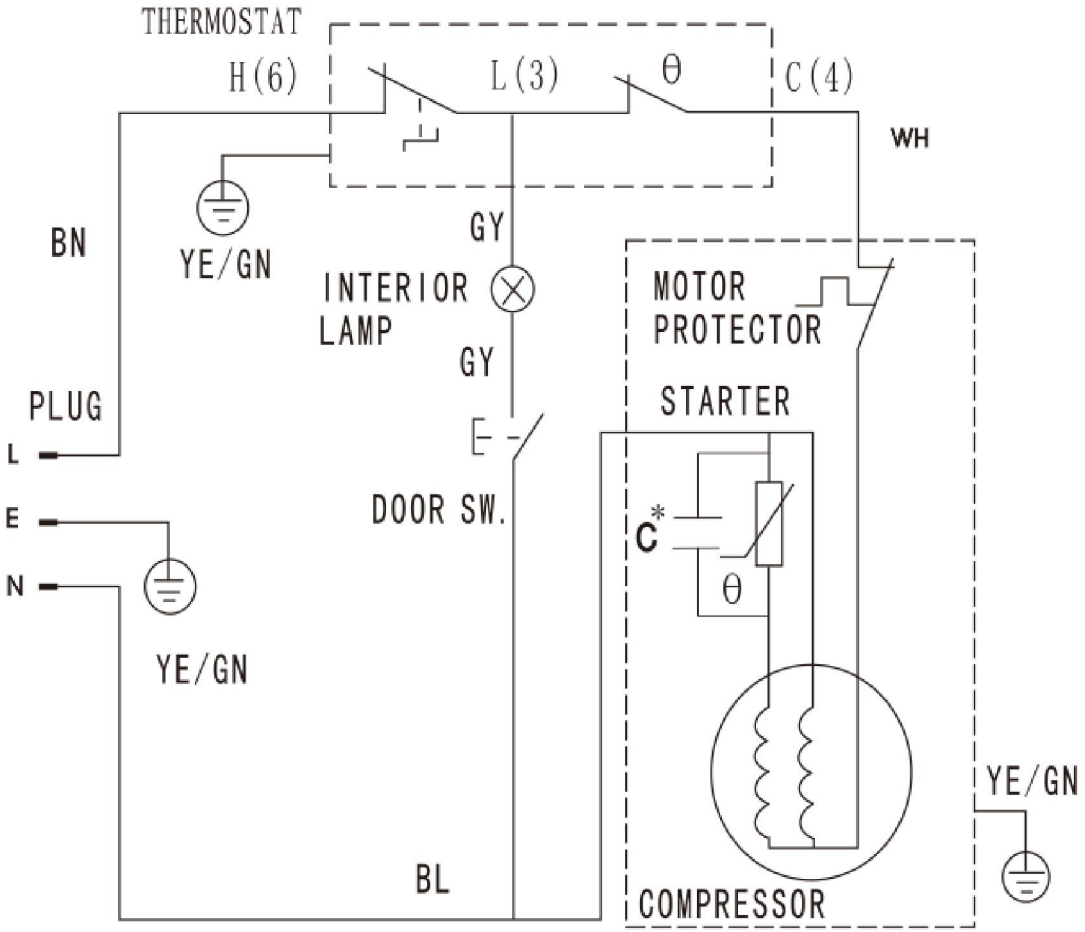
1->2->3->4->5->6->7

5-2. Refrigeration flow scenography



Chapter 6 Circuit diagram

6-1. Brief principle diagram



C*:The capacitor is optional according to different compressor model

Chapter 7 Trouble shooting

7-1. phenomena and solving

Problems	Reasons	Solving methods
Compressor can't be started	1. The fuse is broken. 2. Cable broken. The contact of plug, socket, and cable is broken. 3. The voltage is too low ,and lower than the rated voltage 220V(The voltage is between 187V and 242V) 4. The knob of the thermostat is at "MIN" position (When ambient temperature is higher than "30" degree centigrade ,set the knob to "1-3" position; When ambient temperature is between "16-30" degree centigrade ,set the knob to the "3-5" position, and when it is lower than "16" degree centigrade ,set the knob to the "5-7" position) 5. The thermostat is out of order 6. The start relay or thermal protection is out of order or broken. 7. The wire of motor starting coil or operation coil is broken.	1. Check if there is short circuit and solve it, if not, change capable fuse 2. Check and contact normally, or else, change damaged part. 3. Use until the voltage rise to the rated voltage ,or attach the voltage stabilizer 4. Set the knob of the thermostat to the suitable position 5. Change the thermostat 6.Change the start relay or the thermal protection 7. Measure using R×1 position of meter, if the wire is short circuit, changes the compressor.
Compressor starts too frequently	1.The distance between protection and the heater is too close 2.The door gasket does not seal enough or the cabinet' heat insulation is not good 3.The condenser' heat dissipation effects is poor, and lead to the compressor work overloaded 4.The setting of the thermostat knob is too low	1. Adjust the overload adjustable screw, and increase their distance. 2. Check and repair the cabinet or the door gasket.(check if the door gasket flashed and repair it) 3. Clean the condenser (for this model the condenser is in the cabinet ,so we should clean the dust on both side of the cabinet) 4. Set the knob of the thermostat

		to the suitable position (When ambient temperature is higher than 30 degree centigrade ,set the knob to 1-3 position, When ambient temperature is between 16-30 degree centigrade ,set the knob to the 3-5 position, and when it lower than 16degree centigrade ,set the knob to the 5-7 position)
Compressor runs without stopping	1. The refrigerant leakage or insufficient 2. The refrigerant is superfluous 3. The thermostat is not work 4. The condenser' heat dissipation effect is poor for the dust. 5. The refrigerator insulation layer is destroyed, and the door gasket' sealing is bad.	1. Check and find the leakage point, let out the refrigerant, then meld it and vacuumed and fill the refrigerant again. 2. Let out the suitable refrigerant (For this model the standard Refrigerant charge is R600a ,41g) 3. Check the thermostat, if the contact space is not right, please adjust the thermostat 'high speed screw, and if control contact is loose, and press it tightly, if it is no effect, please change the thermostat. 4. Clean the condenser (for this model the condenser is in the cabinet ,so should clean the dust on both side of the cabinet) 5. Check and repair the cabinet or the door gasket.(check if the door gasket flashed and repair it)

There is noise when the compressor running	1.The fridge body is not stable and in level. 2.When the compressor is running ,there is friction in tube and fridge that lead to syntony. 3. Compressor fixed screw is too loose 4.The damping washer fixed too tight or loose or ageing	1.Make the refrigerator stable (adjust the feet) 2.Move the tube and avoid the friction (the distance between tube and tube ,evaporating dish and side cabinet is more than 1cm) 3.Fasten the screw 4.Adjust the fixed angle or change the damping washer
There is no frost on evaporator	1.The refrigerant leakage 2.There is ice block or dirty block in the capillary or the system.	1.Check and find the leakage point, let out the refrigerant, then meld it and vacuumed and fill the refrigerant again. 2.Clean the system with blowing nitrogen, change the capillary and vacuum and fill the refrigerant again.
The thermostat is out of order	1. The internal temperature feeling medium of the thermostat leakage 2. The temperature parameter drift	Change the thermostat
No frosting	1. The door gasket flashed and lead to the cold air out of the fridge 2. The knob of thermostat is set too high	1. Use the blower to repair the door gasket (The distance between the blower air out and the door gasket is more than 20cm. Do not touch the door gasket with our hand .And when blowing the door gasket, pat the door lightly with our hands.) 2. Change the thermostat (the method as up saying)
No cooling	1.The refrigerant leakage 2.The knob of thermostat is set too low	1. Check and make sure whether there is leakage, and find the leakage point, let out the refrigerant, then meld it and vacuumed and fill the refrigerant again. 2. Adjust the thermostat

7-2.Compressor parameter

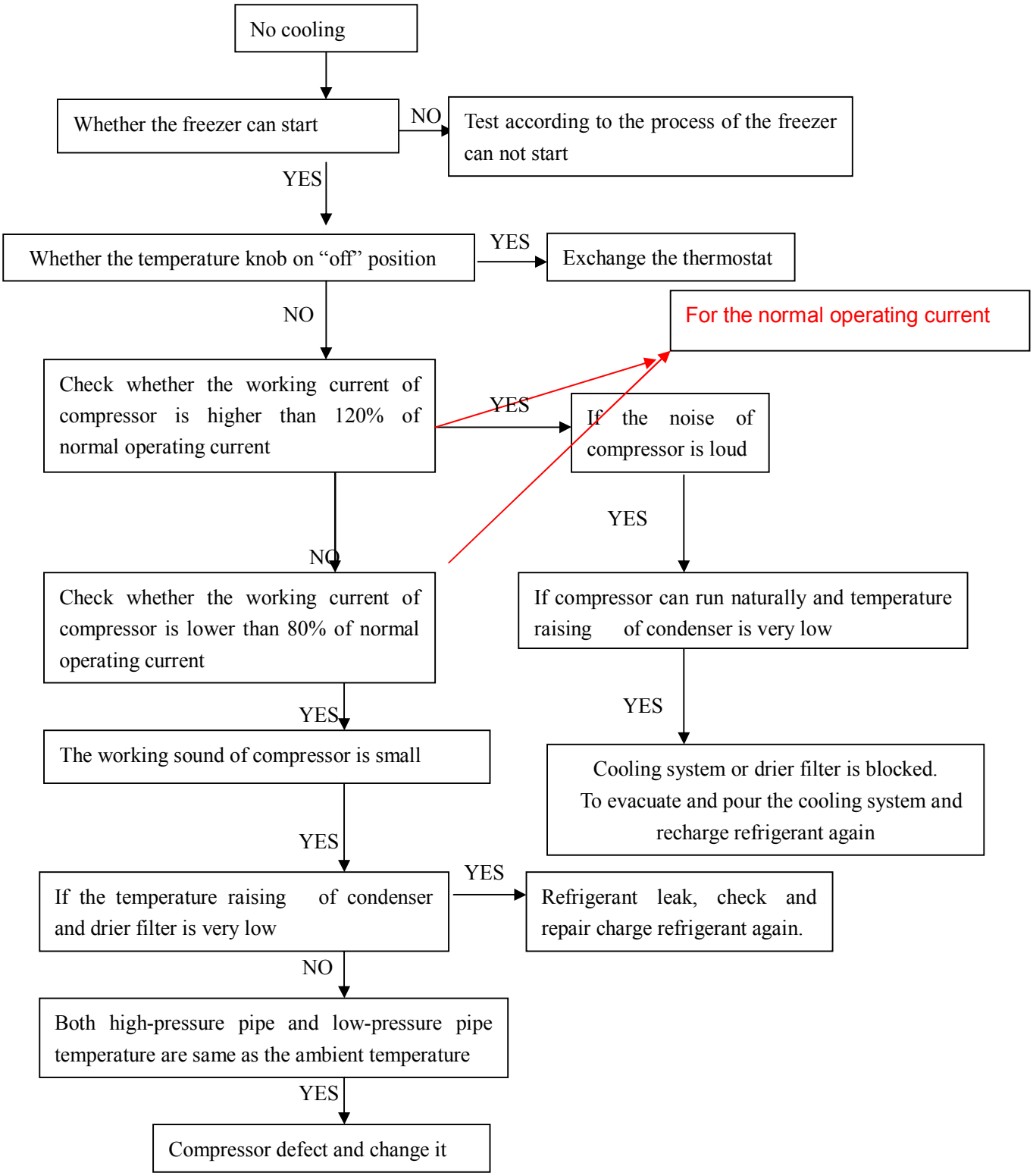
Part Name	Ambient temperature 25°C model:			
Compressor	model		Main Wiring	Auxiliary Wiring
	QD65YV	Normal	35Ω	29 Ω
Starter	Model	**QP2-15 / JPQⅡ-15**		
	Max working voltage	350 V		
	Max running current	8.0 A		
Overload protector	Model	**B50-100**		
	Open temperature	120±5℃		
	Close temperature	61+9/-9 ℃		
Run capacity	Normal	**3μF**		

7-3.Termostat parameter

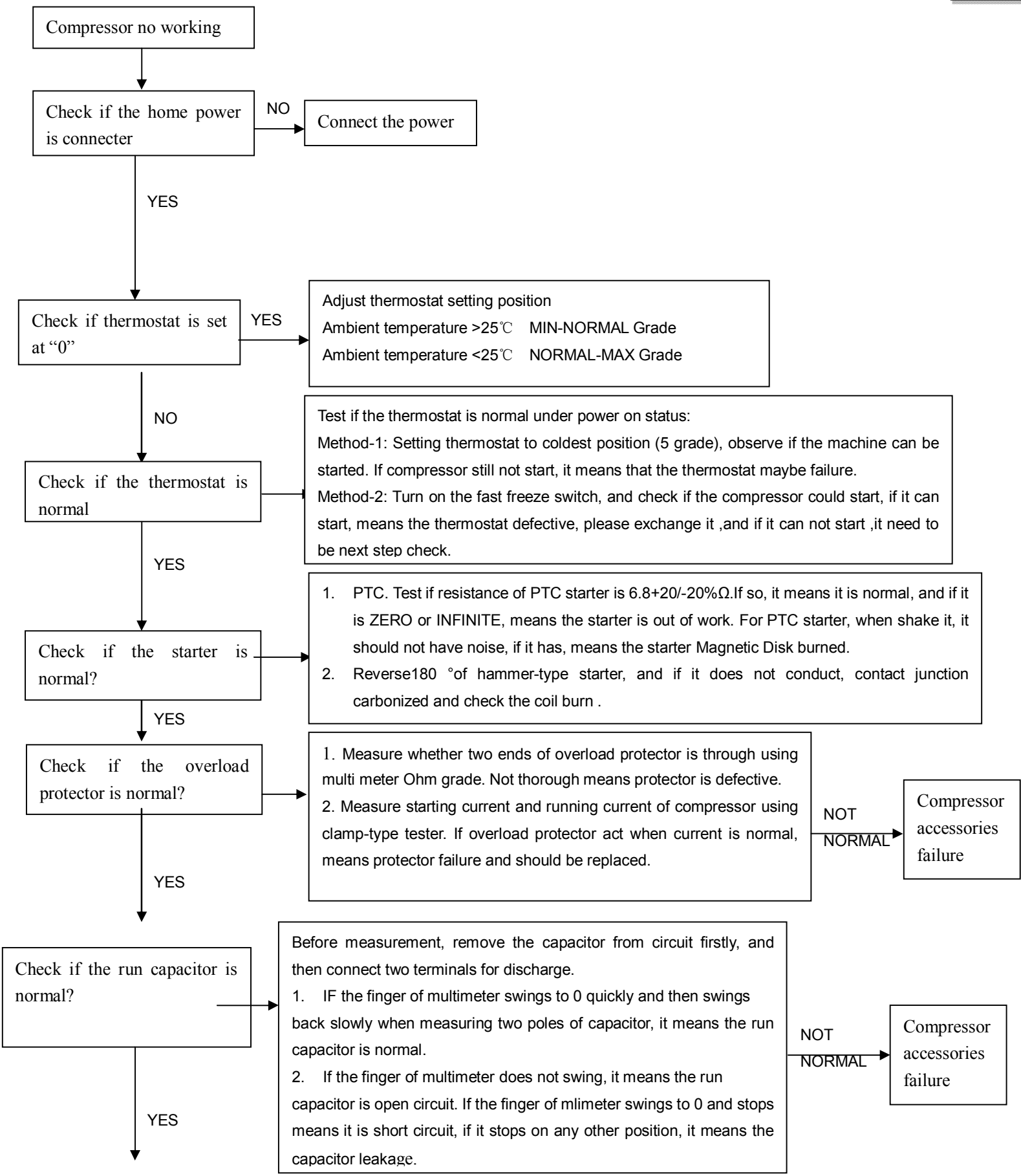
Model	Technology parameter						
	Warm point		Cold point		Middle point		Capillary length
	On	Off	On	Off	On	Off	
WPF31S-102-011WX	5±1	-7±1.5	5±1	-25±2	-	-	598±15

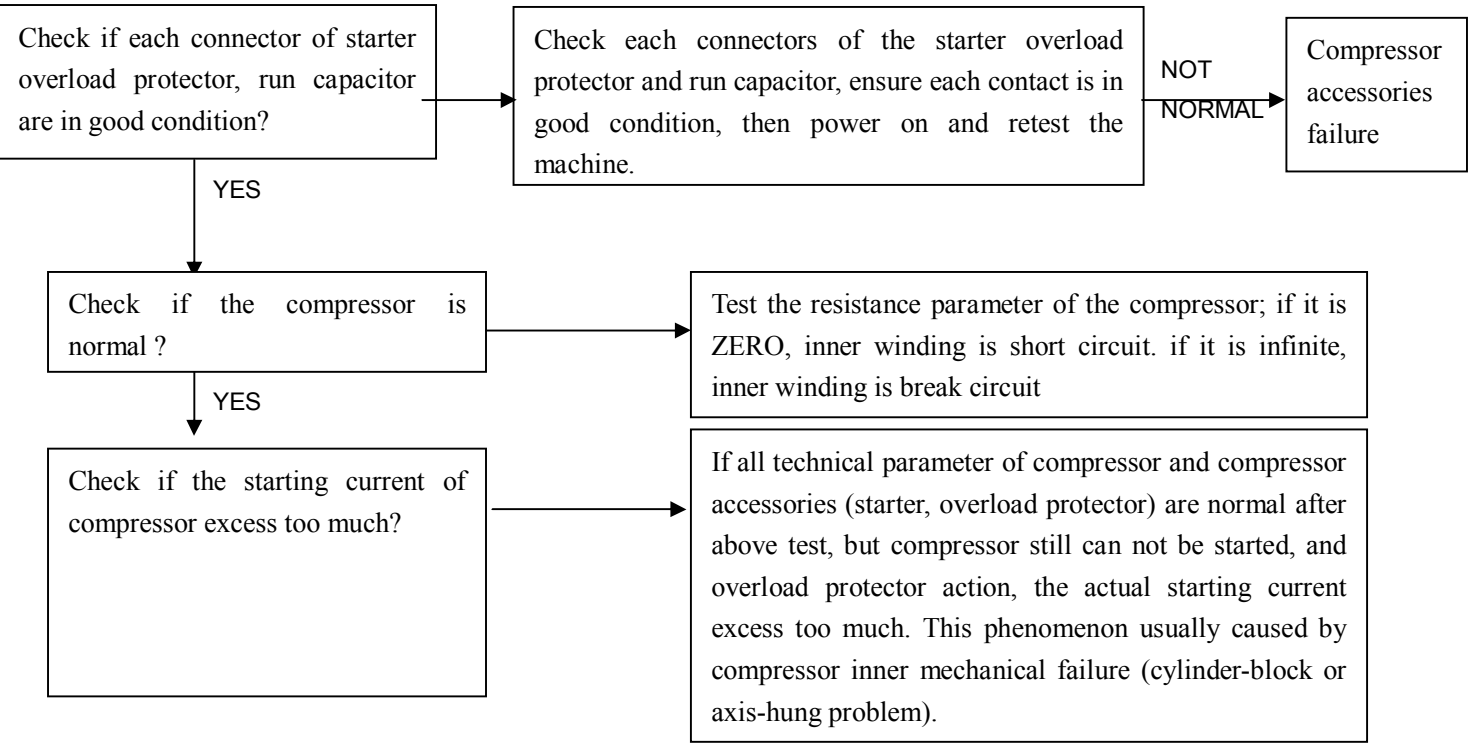
Chapter 8 Quick check

8-1.No cooling

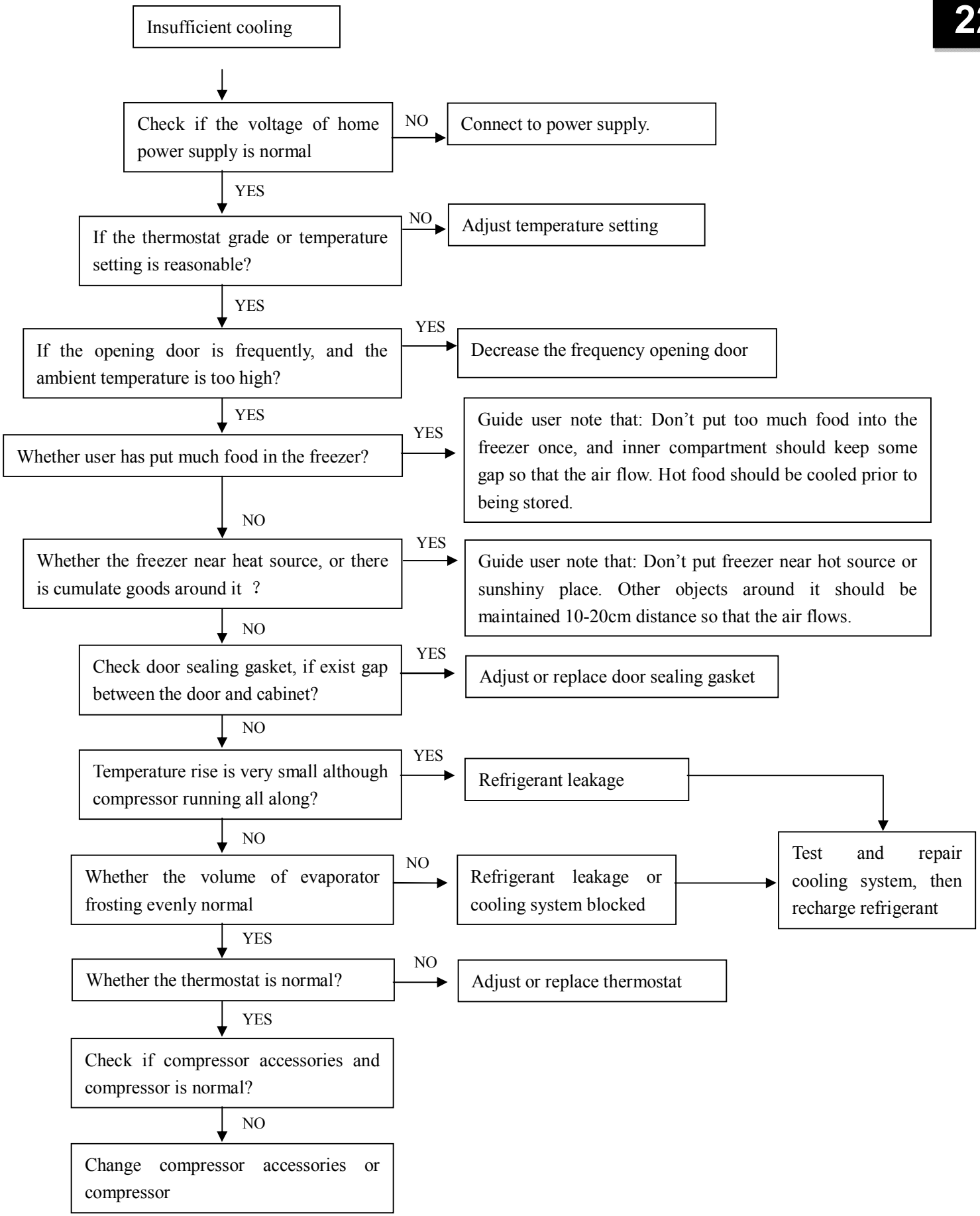

No cooling
Whether the freezer can start
NO
Test according to the process of the freezer can not start
YES
Whether the temperature knob on “off” position
YES
Exchange the thermostat
NO
For the normal operating current
Check whether the working current of compressor is higher than 120% of normal operating current
YES
If the noise of compressor is loud
YES
NO
Check whether the working current of compressor is lower than 80% of normal operating current
If compressor can run naturally and temperature raising of condenser is very low
YES
YES
The working sound of compressor is small
Cooling system or drier filter is blocked.
To evacuate and pour the cooling system and recharge refrigerant again
YES
If the temperature raising of condenser and drier filter is very low
YES
Refrigerant leak, check and repair charge refrigerant again.
NO
Both high-pressure pipe and low-pressure pipe temperature are same as the ambient temperature
YES
Compressor defect and change it

8-2.Compressor no start

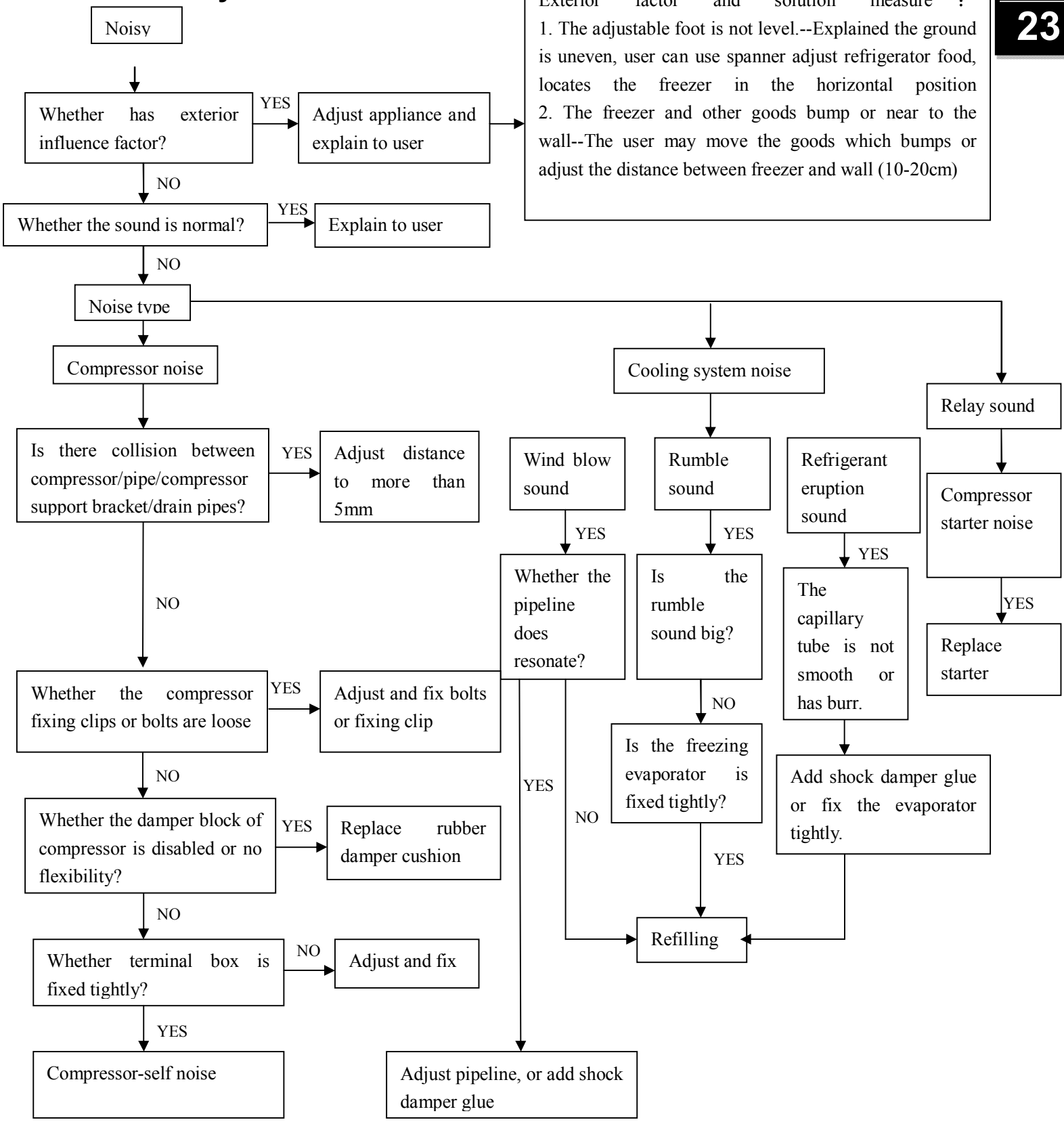

Compressor no working
Check if the home power is connecter
NO
Connect the power
YES
Check if thermostat is set at "0"
YES
Adjust thermostat setting position
Ambient temperature >25℃ MIN-NORMAL Grade
Ambient temperature <25℃ NORMAL-MAX Grade
NO
Check if the thermostat is normal
Test if the thermostat is normal under power on status:
Method-1: Setting thermostat to coldest position (5 grade), observe if the machine can be started. If compressor still not start, it means that the thermostat maybe failure.
Method-2: Turn on the fast freeze switch, and check if the compressor could start, if it can start, means the thermostat defective, please exchange it ,and if it can not start ,it need to be next step check.
YES
Check if the starter is normal?
1. PTC. Test if resistance of PTC starter is 6.8+20/-20%Ω.If so, it means it is normal, and if it is ZERO or INFINITE, means the starter is out of work. For PTC starter, when shake it, it should not have noise, if it has, means the starter Magnetic Disk burned.
2. Reverse180 °of hammer-type starter, and if it does not conduct, contact junction carbonized and check the coil burn .
YES
Check if the overload protector is normal?
1. Measure whether two ends of overload protector is through using multi meter Ohm grade. Not thorough means protector is defective.
2. Measure starting current and running current of compressor using clamp-type tester. If overload protector act when current is normal, means protector failure and should be replaced.
NOT NORMAL
Compressor accessories failure
YES
Check if the run capacitor is normal?
Before measurement, remove the capacitor from circuit firstly, and then connect two terminals for discharge.
1. IF the finger of multimeter swings to 0 quickly and then swings back slowly when measuring two poles of capacitor, it means the run capacitor is normal.
2. If the finger of multimeter does not swing, it means the run capacitor is open circuit. If the finger of mlimeter swings to 0 and stops means it is short circuit, if it stops on any other position, it means the capacitor leakage.
NOT NORMAL
Compressor accessories failure
YES


Check if each connector of starter overload protector, run capacitor are in good condition?
Check each connectors of the starter overload protector and run capacitor, ensure each contact is in good condition, then power on and retest the machine.
NOT NORMAL
Compressor accessories failure
YES
Check if the compressor is normal ?
Test the resistance parameter of the compressor; if it is ZERO, inner winding is short circuit. if it is infinite, inner winding is break circuit
YES
Check if the starting current of compressor excess too much?
If all technical parameter of compressor and compressor accessories (starter, overload protector) are normal after above test, but compressor still can not be started, and overload protector action, the actual starting current excess too much. This phenomenon usually caused by compressor inner mechanical failure (cylinder-block or axis-hung problem).

8-3.Poor cooling


Insufficient cooling
Check if the voltage of home power supply is normal
NO
Connect to power supply.
YES
If the thermostat grade or temperature setting is reasonable?
NO
Adjust temperature setting
YES
If the opening door is frequently, and the ambient temperature is too high?
YES
Decrease the frequency opening door
YES
Whether user has put much food in the freezer?
YES
Guide user note that: Don't put too much food into the freezer once, and inner compartment should keep some gap so that the air flow. Hot food should be cooled prior to being stored.
NO
Whether the freezer near heat source, or there is cumulate goods around it ?
YES
Guide user note that: Don't put freezer near hot source or sunshiny place. Other objects around it should be maintained 10-20cm distance so that the air flows.
NO
Check door sealing gasket, if exist gap between the door and cabinet?
YES
Adjust or replace door sealing gasket
NO
Temperature rise is very small although compressor running all along?
YES
Refrigerant leakage
NO
Whether the volume of evaporator frosting evenly normal
NO
Refrigerant leakage or cooling system blocked
Test and repair cooling system, then recharge refrigerant
YES
Whether the thermostat is normal?
NO
Adjust or replace thermostat
YES
Check if compressor accessories and compressor is normal?
NO
Change compressor accessories or compressor

8-4.Noisy


Noisy
Whether has exterior influence factor?
YES
Adjust appliance and explain to user
Exterior factor and solution measure :
1. The adjustable foot is not level.--Explained the ground is uneven, user can use spanner adjust refrigerator food, locates the freezer in the horizontal position
2. The freezer and other goods bump or near to the wall--The user may move the goods which bumps or adjust the distance between freezer and wall (10-20cm)
NO
Whether the sound is normal?
YES
Explain to user
NO
Noise type
Compressor noise
Cooling system noise
Relay sound
Is there collision between compressor/pipe/compressor support bracket/drain pipes?
YES
Adjust distance to more than 5mm
Wind blow sound
Rumble sound
Refrigerant eruption sound
Compressor starter noise
YES
YES
YES
YES
NO
Whether the pipeline does resonate?
Is the rumble sound big?
The capillary tube is not smooth or has burr.
Replace starter
Whether the compressor fixing clips or bolts are loose
YES
Adjust and fix bolts or fixing clip
NO
Is the freezing evaporator is fixed tightly?
Add shock damper glue or fix the evaporator tightly.
Whether the damper block of compressor is disabled or no flexibility?
YES
Replace rubber damper cushion
YES
NO
NO
YES
Refilling
Whether terminal box is fixed tightly?
NO
Adjust and fix
YES
Compressor-self noise
Adjust pipeline, or add shock damper glue

SERVICE MANUAL

Model: HRFZ-250DAA

Issue	2012-4-9
Rev.	Ref0911S006V0

Sincere forever

Haier Group

Haier Industrial Park, No.1, Haier Road

266101, Qingdao, China

http://www.haier.com